$$2a\cos\alpha\cos\beta\cos\gamma=\rho\cos(\theta-\alpha-\beta-\gamma).$$

Join the points A, B, and C to make a triangle. The points of intersection are then the feet of the perpendiculars let fall from P upon the three sides, and the line through the points of intersection is the pedal line of P with respect to the triangle.

II. Solution by S. LEFSEHETZ, Clark University.

If we transform by inversion, the pole of inversion being in P, the transformed of the three circles of diameters PA, PB, and PC are perpendiculars at PA, PB, and PC in A', B', and C', points where these three lines meet the line obtained by transformation of the given circle. These three perpendiculars envelop a parabola of focus P; therefore, the circle circumscribed to the triangle they form passes through P, — a well known property of the parabola. By transforming back, we obtain a straight line and the proposition is thus proved.

Also solved by the Proposer.

PROBLEMS FOR SOLUTION.

ALGEBRA.

355. Proposed by V. M. SPUNAR, M. and E. E., Chicago, Ill.

Solve the equations:

$$\frac{1}{x_1}+\frac{1}{x_2}+\frac{1}{x_3}=a_1;$$
$$\frac{1}{x_2}+\frac{1}{x_3}+\frac{1}{x_4}=a_2;$$
$$\frac{1}{x_3}+\frac{1}{x_4}+\frac{1}{x_5}=a_3;$$
$$\cdots\cdots\cdots$$
$$\frac{1}{x_{n-2}}+\frac{1}{x_{n-1}}+\frac{1}{x_n}=a_{n-2};$$
$$\frac{1}{x_{n-1}}+\frac{1}{x_n}+\frac{1}{x_1}=a_{n-1};$$
$$\frac{1}{x_n}+\frac{1}{x_1}+\frac{1}{x_2}=a_n.$$

356. Proposed by ARTEMAS MARTIN, Ph. D., Washington, D. C.

Solve by quadratics, if possible, the equations,

$$w(x+y+z)=a,\quad x(w+y+z)=b,$$
$$y(w+x+z)=c,\quad z(w+x+y)=d.$$

[From the *Mathematical Magazine*, Vol. II, p. 256.]